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ABSTRACT

Clinical teaching involves instruction in a natural health-related environment which allows students to observe and participate in the actual practice of the profession. The use of objectives, the sequence of instruction, the instructional methods and materials, and the evaluation of student performance constitute the components studied in previous research. A study conducted at McGill University (Canada) attempted to integrate data to formulate a theoretical framework. Forty-one students; 14 clinical instructors; and 5 classroom instructors in nursing, dentistry, and physiotherapy participated in the study. Observations of clinical teaching; questionnaires completed by clinical students; and interviews with physiotherapy students, clinical instructors, and classroom instructors provided the data. The results revealed that neither instructors nor students were generally preoccupied with the use of objectives; sequencing, or organization, was a chief concern; the instructional methods were effectively and consistently employed; the materials were discipline-specific; and student evaluation was a concern. A course for clinical instructors, videotaped analyses, and instructional design segments contributed by participants confirmed the relevance of each element. More research is required to advance from descriptive models toward a theory of clinical instruction. (RG)

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Instructional Development for Clinical Settings

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The purpose of this paper is to describe, based on data collected from three disciplines, the process of clinical teaching with a view to developing a model for instructional development in this area. Clinical teaching is defined as instruction which occurs in a natural health-related environment (medicine, dentistry, nursing, social work, physiotherapy, etc.). Students observe and participate in activities which are intended to provide opportunities for the application of facts, principles, and theories to the practice of the profession. Clinical teaching differs from classroom teaching in that it occurs in a setting which is not designed for instruction: staff and patients or clients are engaged in activities which have priority over the teaching and learning process.

Some aspects of clinical teaching have been addressed in detail in the literature; for example, the evaluation of student performance in both medicine and nursing has received considerable attention. Also, the effectiveness of specific teaching strategies (simulations, role playing, etc.) has been investigated. However, little or no theoretical foundation exists for this research, and no comprehensive analysis of clinical teaching across disciplines has been done at this time.

This study is seen as the first step in providing the descriptive data upon which a model can be designed and further research conducted, leading to the development of a theory of clinical instruction.

Background

Previous research has been conducted on specific components of clinical instruction. This literature will be briefly summarized within four categories: the use of objectives or other orienting stimuli; the sequence or organization of instruction; instructional

methods and materials; and the evaluation of student performance.

The effectiveness of objectives and other orienting stimuli (advance organizers, pre-tests) has been demonstrated repeatedly in educational research. In clinical teaching, most authors advocate the use of objectives (Stritter, 1972) and most clinical instructors use some orienting technique (Kiely, 1981). Students perceive this as a factor which enhances learning (Miller, 1976; Stritter, Hain & Grimes, 1975); however, they may place less emphasis on clearly defined objectives than do instructors (O'Shea & Parsons, 1979). The use of objectives is often closely associated with evaluation strategies in the facilitation of learning in the clinical area (Levin & Riley, 1984).

It is generally agreed that the sequence and organization of instruction is an important factor in facilitating learning. However, in the clinical setting, the sequence is affected by the daily activities of the institution and the availability of patients. Some early literature documents this issue (e.g. Quint, 1965) and presents guidelines for planning clinical assignments (Hayter, 1967). Clinical instructors tend to adopt a simple to complex patient care sequence (e.g. Kiely, 1981) and taxonomies of learning for the clinical area have been developed to reflect this approach. Clinical teaching, though, is still described as "individualized" with priority being placed on patient welfare and institutional rules (Scully & Shepard, 1983).

Considerable attention has been paid to the effectiveness of specific instructional strategies in the clinical area; for example, the use of computer assisted instruction (Bratt & Vockell, 1986), the use of pre-clinical conferences (DiRienzo, 1983), and the use of group work (Lammert, 1981). At a more general level, Stritter et al.

(1975) investigated students' perceptions of effective clinical teaching and concluded that student participation, student-centered activities, applied problem solving, and an opportunity to practice skills were seen to facilitate learning.

In the area of evaluation of students' performance, a large but fragmented and discipline-specific literature exists. Generally, systems are devised for the observation of performance in real or simulated settings (Holmes et al., 1978; Loomis, 1985), and efforts are made to establish the reliability and validity of specific instruments (e.g. Feil, 1982). Although each discipline has devoted extensive effort to this area, it continues to be a concern for both practitioners and researchers, with the measurement of affective behaviors being one of the most problematic issues (e.g. Willoughby, Gammon & Jones, 1979).

As was illustrated in this brief overview, the research on clinical teaching has tended to address specific and isolated components of the teaching and learning process. Before generalizable and meaningful research can be conducted, it is essential that the process be described across disciplines and that these data be used to construct a theoretical framework upon which further investigations can be based.

Methodology

A descriptive design was selected for this study since no integrated literature exists upon which hypotheses can be formulated. Three disciplines were chosen on the basis of accessibility: dentistry, nursing, and physiotherapy. Each discipline was involved in the study in varying degrees.

Sample

A total of 41 students, 14 clinical instructors and 5 academic instructors participated in the study. The breakdown of the sample by discipline is presented in Table 1. All participants were associated with McGill University's teaching hospitals. The sample is neither randomly selected from nor representative of the population of instructors and students; data may be used to develop a model for further testing but may not be used to generalize to other groups.

Table 1

Participants by Discipline

	Physiotherapy	Nursing	Dentistry	Total
Students	18	6	17	41
Clinical Instructors	12	1	1	14
Academic Instructors	5	-	-	5

Instruments

Descriptive data were collected using observations, questionnaires and interviews.

Observations of clinical teaching were conducted using a 29 item checklist developed for this purpose. Three aspects of instruction were observed: pre-clinical preparation, student-patient interaction, and post-clinical discussion. Four clinical instructors (one from nursing, one from dentistry, and two from physiotherapy) and their students were observed for a minimum of seven hours each.

Questionnaires were administered to a total of 25 clinical students (two from physiotherapy, 17 from dentistry, and 6 from

nursing). The questionnaire, developed for this study, consisted of 16 items responded to on a 4-point Likert scale. Items were intended to measure students' perceptions of clinical instruction, but not to evaluate the quality of teaching.

In addition, 16 physiotherapy students were interviewed using a semi-structured interview technique, covering 15 aspects of clinical teaching. All interviews were tape-recorded; they lasted an average of 30 minutes each. Content analysis procedures were used to summarize these data.

Ten clinical instructors from physiotherapy were interviewed using a semi-structured technique which addressed 16 components of clinical instruction. All interviews were tape-recorded and they were approximately 60 minutes in length. Data were summarized using content analysis.

Finally, interviews were conducted with five academic (classroom) instructors from physiotherapy. This sample was included in the study subsequent to the analyses of previous data: the relationship between the classroom and clinical instruction had been shown to be a concern of both clinical instructors and students. Twenty-one questions were asked of the classroom instructors using a semi-structured format. The tape-recorded interviews lasted approximately 90 minutes and were summarized using content analysis procedures.

Procedures

Data were collected, using the techniques described above, over two semesters (26 weeks).

Following the analyses of the data, a 13-week course, entitled "Designing Clinical Instruction" was prepared, based on the results obtained. The course was offered, for credit, to clinical instructors

in nursing and physiotherapy. The research purpose of the course was the validation of results obtained from the first phase of the study. Thirty participants registered in the course: six from nursing and 24 from physiotherapy.

As a part of the course, participants were videotaped demonstrating clinical teaching strategies. In addition each participant designed a segment of clinical instruction, which was submitted in written form. And, finally, a questionnaire was administered in the last session of the course to assess participants' perceptions of the components of the course.

Results

Given the variety of sources of information and techniques used for collecting the data, the results of the study were detailed and complex. Results will be summarized under the instructional design components used to organize the review of the literature: objectives or orienting stimuli, sequencing of instruction, methods and materials, and evaluation of student performance. In each section, results will be provided in an integrated form, though where differences among disciplines or between instructors and students exist, these will be pointed out.

Objectives and Other Orienting Stimuli

In general, the area of objectives or the use of orienting stimuli was not a concern for either instructors or students. The one exception to this was dentistry students' perception (nine out of 17) that expectations were not clear regarding emergency situations. However, the same group of students perceived the goals of the clinical experience to be clear (17 out of 17). Clinical instructors expressed,

in interviews, some concern about setting objectives for students who varied considerably in theoretical knowledge; but no problems were perceived by the students in those areas. In the majority of cases, contract learning was utilized, in which objectives were specified.

Students did express the perception that the objectives of their classroom instruction did not match the events in their clinical experience. When this issue was followed up with classroom instructors, the majority of the respondents did see themselves as preparing students for clinical work, although usually in a general way (e.g. "to develop analytical, scientific, and reasoning skills for treatment purposes").

Sequencing of Instruction

The sequencing, or organization, of instruction was an area of primary concern for both instructors and students (with the exception of classroom instructors). Due to the unpredictable nature of the clinical environment, individual instructors tended to develop their own strategies for the organization of their clinical teaching. Sequencing strategies were based on: the speciality procedures of a particular ward, the phases of a treatment procedure, the severity or complexity of illness of available patients, the "progress" of individual students. In no instances were sequencing procedures based on task or procedural analyses of expected student learning. No clinical instructors expressed satisfaction with the sequencing procedures they employed; they saw themselves as adapting to the daily activities of the institution in which the teaching occurred.

Instructional Methods and Materials

Across disciplines, instructional methods were consistently and effectively (as perceived by instructors and students) employed. Generally, the instructor demonstrated a procedure, then the student performed the procedure under supervision and with feedback from the instructor. Ideally, although not in all cases, the student had an opportunity to practice the skill or procedure. Following student performance, a questioning technique was commonly employed by clinical instructors. In the discipline of dentistry, students tended to perform more independently, with the instructor monitoring rather than supervising performance.

Instructional materials were discipline-specific. They included realia (equipment, medications, etc.) and printed materials and resources. In no instances were materials perceived as an area of concern by instructors or students.

Evaluation of Student Performance

Evaluation of student performance included two issues: formative feedback on student performance and summative evaluation of students' clinical skills. Feedback proved to be the issue of most concern to both students and instructors. Issues unique to the clinical environment were raised: the provision of feedback in the presence of a patient or staff member, the evaluation of student performance in terms of patient safety and interpersonal skills with patients. Students, in both questionnaires and interviews, expressed anxiety about receiving feedback, and instructors described both ethical and safety concerns regarding the provision of effective feedback. It was generally agreed that evaluating students' affective behaviour was not reliable or valid, and strategies for improving this process did not

appear to be readily available. In addition, students did not feel that they had an accurate perception of their clinical progress.

Summative evaluation of clinical performance was a concern in terms of systematically documenting poor or unacceptable behaviour. And yet, instructors tended to "feel", early in the clinical rotation, that they could discriminate among "good", "poor", and "indifferent" (or borderline) students. The difficulty lay in describing this feeling systematically.

Almost all clinical instructors appeared to expend considerable time with students who were performing poorly in the clinical area, and some expressed this as a concern.

Model of Clinical Instruction

Responses of clinical instructors and students could be summarized within the traditional instructional design model, with the unique environmental characteristics most strongly affecting the sequence of instruction and the evaluation of student performance. Instructional strategies were also influenced, but in a consistent manner which was not of concern to instructors or students. The resultant model for instructional design and development is presented in Figure 1.

Validation of the Model of Clinical Instruction

The results of the study led to the development and implementation of a course for clinical instructors. Each of the components of instructional design described above were included in the course in a lecture, discussion and workshop format.

Videotaped analyses of participants' clinical teaching strategies confirmed the relevance of these components: each one was observable in each strategy. Written instructional design segments submitted by

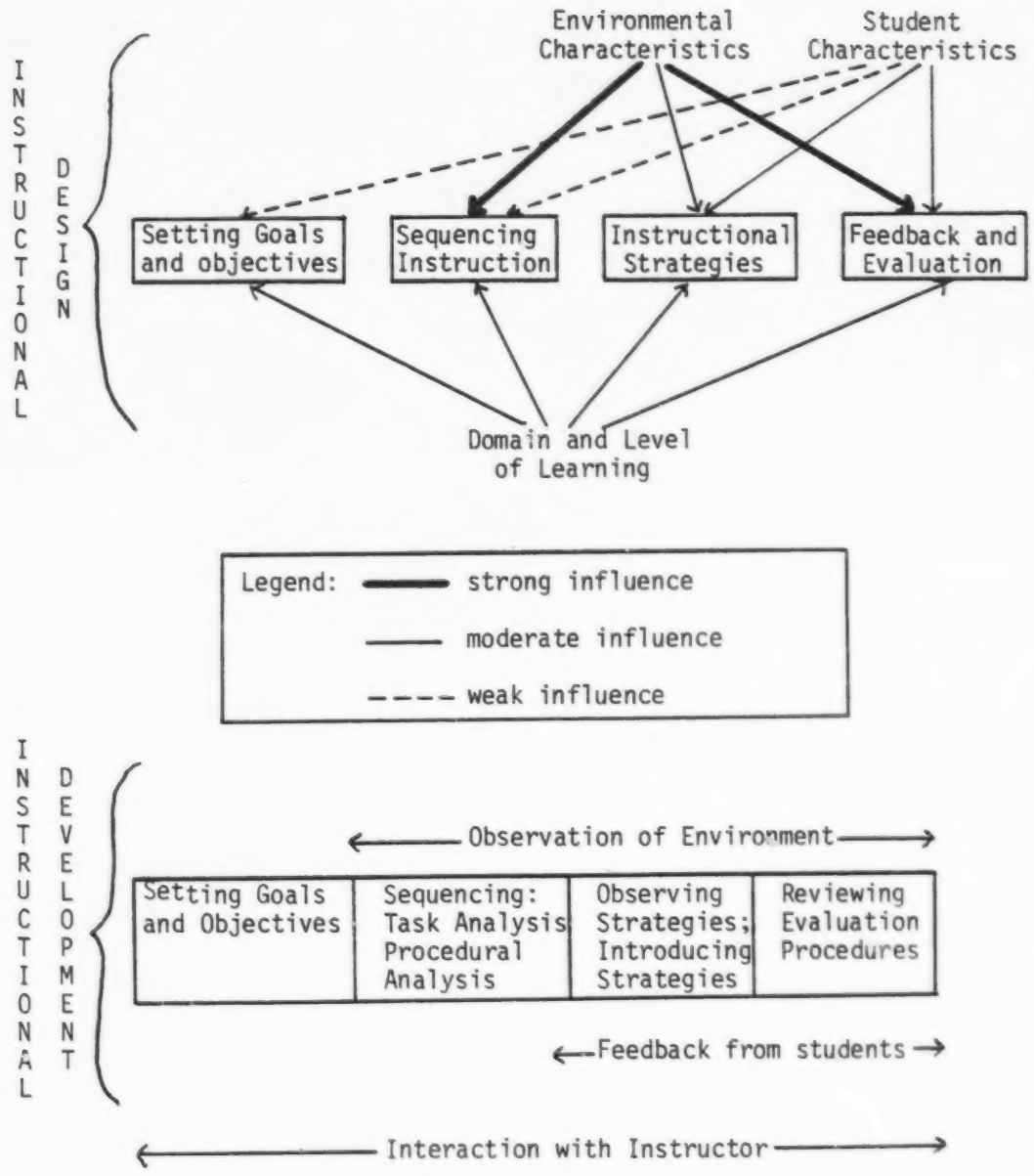

Figure 1: Instructional Development Model for Clinical Settings

participants also confirmed the applicability of each component of the model to clinical teaching. Of primary importance here was the integration that occurred among the components. The results from the descriptive data indicated that the evaluation of student performance tended to be based on the objectives, but otherwise little systematic integration of the aspects of instructional design existed. Subsequent to participation in the course, the sequencing of instruction was based on analyses of objectives, methods and materials were matched to the domain and level of learning of the objectives, and evaluation techniques were clearly related to each of the other components. Finally, results of the questionnaire administered to all participants clearly indicated that the model was perceived as relevant and useful to the process of clinical teaching.

Discussion

The results of this study support the application of an instructional design model to clinical teaching. The environment in which clinical instruction takes place appears to most strongly affect the sequencing of instruction and the provision of feedback to students. Yet when instructors are trained in sequencing procedures such as task and procedural analysis and in evaluation techniques, they are able to design systematic procedures which are relevant to the clinical area.

The literature on clinical instruction tends to be discipline-specific and fragmented. Very little guidance is available for instructors and instructional developers working with faculty in the health professions. The model presented here could be used as a starting point for further work in the area, both for researchers and practitioners.

Considerable research is required in this area of instructional development. First, more comprehensive descriptive or ethnographic work, across disciplines, should be conducted. Secondly, correlational studies could be done, with the goal of predicting perceived effective clinical instruction. And finally, although difficult to design, some experimental research on the effectiveness of instructional development strategies needs to be undertaken. With this effort, it will be possible to move from descriptive models for clinical instruction towards the development of a theory of clinical instruction. Then, the fragmented work done to data can be integrated and some steps will have been taken to the improvement of instruction in clinical settings.

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